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| APPLICATION NO.                                                                 | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---------------------------------------------------------------------------------|-------------|----------------------|---------------------|------------------|
| 10/523,186                                                                      | 01/28/2005  | Iouri Kalinitchenko  | 02-38 US            | 8299             |
| 23693                                                                           | 7590        | 05/03/2007           | EXAMINER            |                  |
| Varian Inc.<br>Legal Department<br>3120 Hansen Way D-102<br>Palo Alto, CA 94304 |             |                      | JOHNSTON, PHILLIP A |                  |
|                                                                                 |             |                      | ART UNIT            | PAPER NUMBER     |
|                                                                                 |             |                      | 2881                |                  |
|                                                                                 |             |                      | MAIL DATE           | DELIVERY MODE    |
|                                                                                 |             |                      | 05/03/2007          | PAPER            |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

**Office Action Summary**

Application No.

10/523,186

Applicant(s)

KALINITCHENKO, IOURI

Examiner

Phillip A. Johnston

Art Unit

2881

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 28 January 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 January 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |                                                                                                                                    |                                                                                         |
|------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                               | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>1-28-2005</u> . | 6) <input type="checkbox"/> Other: _____                                                |

1. This Office Action is submitted in response to the preliminary amendment filed 1-28-2005, wherein claims 1-20 are pending.

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

3. Claims 1-16, and 20 are rejected under 35 U.S.C. 102 (b) as being clearly anticipated by Sakata, U.S. Patent No. 6,265,717.

The diagram illustrates a mass filter system 100. It features a Gas Controller, RIF Power, Mass Filter Controller, System Controller, and Personal Computer. The mass filter section 180 includes a series of ion optics and trapping regions labeled 110 through 180. The diagram shows the flow of Ar gas and the electrical connections between the various components.

The interface extracts ions from the plasma source through sampling cone 151 through the sampling orifice 152, then transferred into the analyzer stage by skimmer cone 155 through skimmer orifice 156. The interface stage is

normally maintained at 200-300 Pa, a relatively higher pressure than the pressure elsewhere in the vacuum chamber. Col. 4, lines 25-31; and 47-63.

Sakata also teaches that increasing the interface stage pressure to 400 Pa, increases ion collisions in the interface volume, causing dissociation of the polyatomic ion species that give rise to spectral interferences. Col. 5, line 26-39.

Sakata further teaches that an inlet 210 is fitted to the interface stage to enable the introduction of a gas (Note Figure 3 below). Introduction of gas (a substance) into the interface stage results in an increase of pressure, which increases ion collisions, and again dissociating the polyatomic ion species that give rise to spectral interferences. Col. 5, line 46-64.

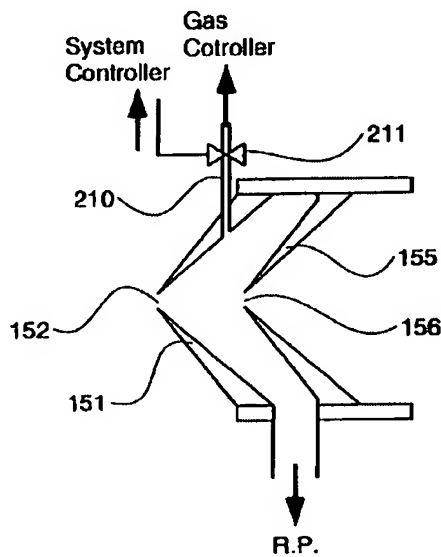
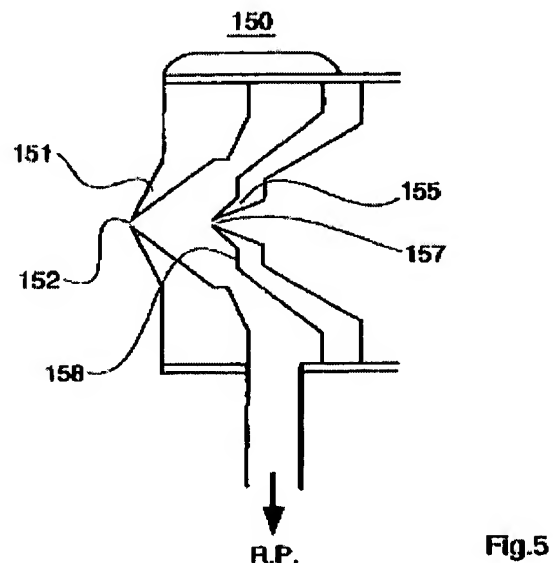
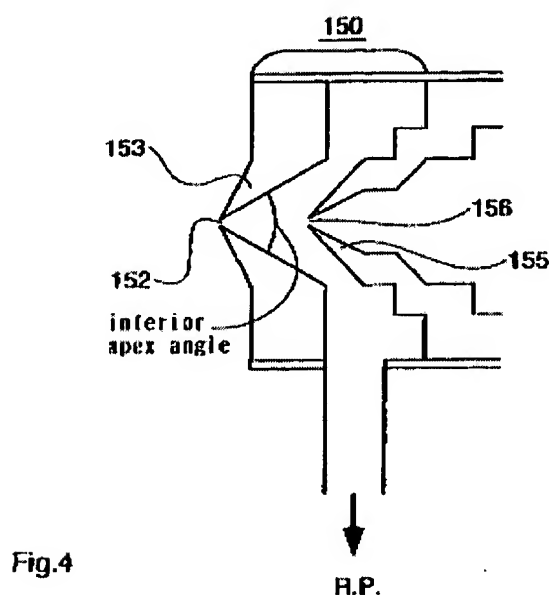


Fig.3

5. Regarding claims 2-4,7 and 8, the rationale applied above to claim 1, also applies to claims 2-4,7 and 8, particularly where a gas (substance) is admitted into the interface volume, which includes the sampling and skimmer orifices (apertures).

6. Regarding claims 5 and 6, Sakata teaches the use of extraction electrode 161 located behind the skimmer cone (Note Figure 1 above), to focus the ion beam entering the chamber through the skimmer cone orifice into the mass filter situated in the analyzer stage. Col. 4, line 25-31; and Col. 4, line 47-63.

7. Regarding claims 9-11, Sakata teaches modifying the sampling cone, by narrowing the interior apex (Note Figures 4 and 5 below) to reduce the pumping efficiency behind the sampling orifice, leading to increased pressure in the region between the cone orifices. It should be noted in Figure 4 that the interface stage has parallel walls, and narrowing the apex angle makes the sampling cone longer.



8. Regarding claims 12-14, Sakata teaches varying the localized pressure regions within the interface by changing the design of the skimmer cone where it protrudes into the Mach Disk, a shock wave that forms in the interface stage behind

the sampling cone, where the supersonic jet exiting the sampling orifice is slowed by collision with residual gas molecules inside the interface. In operation, the skimmer cone tip protrudes into the Mach Disk, sampling ions from behind it, in the region known as the zone of silence, where pressure remains relatively constant.

9. Regarding claim 15, the rationale applied above to claim 1, also applies to the structural limitations of claim 15.

10. Regarding claim 16, the rationale applied above to claims 12-14, also applies to the structural limitations of claim 16. Sakata also teaches that the sampling and skimmer cones produce a known "zone of silence", which is inherently radial confinement of the plasma. Col. 3, line 52-61.

11. Regarding claim 20, Sakata teaches the use of positive and negative potentials as pointed out above regarding claim 1.

### ***Claims Rejection – 35 U.S.C. 103***

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claims 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,245,417 to Sakata.

14. Regarding claims 17-19, Sakata teaches all the required limitations of the claims therein, as pointed out regarding claims 15 and 16 above.

15. Sakata fails to teach stagnation of the plasma within the interface region.

16. The examiner takes Official Notice that forming a region of stagnant gas flow within an interface is well known in the art. See USPN 6,462,336 to Bajic. Therefore it would have been obvious to utilize stagnant gas flow in the interface of Sakata so that the velocity of the sample ions within the interface volume is low and has no net direction, thereby increasing the probability that sample ions will enter the mass spectrometer and decreasing the likelihood of unwanted molecules and particles penetrating through the mass spectrometer to influence the ion detection signal.

### ***Conclusion***

17. Any inquiry concerning this communication or earlier communications should be directed to Phillip Johnston whose telephone number is (571) 272-2475. The examiner can normally be reached on Monday-Friday from 7:30 am to 4:00 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiners supervisor Robert Kim can be reached at (571)272-2293. The fax phone number for the organization where the application or proceeding is assigned is 571 273 8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

Application/Control Number: 10/523,186  
Art Unit: 2881

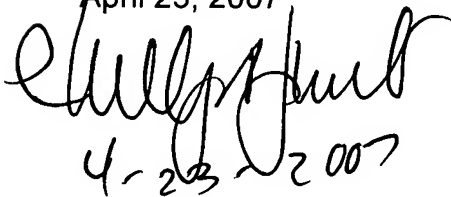
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Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

PJ

April 23, 2007



Cheryl Hunt  
4-23-2007